

## WHAT IS CLAIMED IS:

1. A hydrogen sulfide suppressing catalyst comprising a Group IIa metal oxide undercoat dispersed on a carrier and a topcoat comprising a three-way conversion catalyst material dispersed on a support.
2. The catalyst of claim 1 wherein the Group IIa metal oxide comprises an oxide of a metal selected from the group consisting of magnesium, calcium, barium and strontium and mixtures thereof.
3. The catalyst of claim 2 wherein the metal comprises strontium.
4. The catalyst of claim 1 wherein the carrier comprises a refractive ceramic or metal monolith having a honeycomb structure.
5. The catalyst of claim 4 wherein the ceramic monolith is selected from the group consisting of cordierite, cordierite-alpha alumina, silicon nitride, zircon mullite, spodumene, alumina-silica magnesia, zircon silicate, sillimanite, magnesium silicates, zircon petalite, alpha alumina and aluminosilicates.
6. The catalyst of claim 4 wherein the ceramic monolith comprises cordierite.
7. The catalyst of claim 4 wherein the metal monolith comprises stainless steel.
8. The catalyst of claim 1 wherein the Group IIa metal oxide is dispersed on the carrier in a loading of about 0.005 to about 1.0 g/in<sup>3</sup> of carrier.
9. The catalyst of claim 8 wherein the Group IIa metal oxide is dispersed on the carrier in a loading of 0.1 to 0.6 g/in<sup>3</sup> of carrier.

10. The catalyst of claim 1 wherein the undercoat further comprises a lanthanum oxide.
11. The catalyst of claim 10 wherein the lanthanum oxide is present in a loading of about 0.005 to about 1.0 g/in<sup>3</sup> of carrier.
12. The catalyst of claim 11 wherein the lanthanum oxide is present in a loading of 0.2 to 0.6 g/in<sup>3</sup> of carrier.
13. The catalyst of claim 1 wherein the top coat comprises a middle layer overlying the undercoat and an upper layer overlying the middle layer.
14. The catalyst of claim 1 wherein the three-way conversion catalyst material comprises a platinum-group metal catalytic component.
15. The catalyst of claim 1 wherein the platinum-group metal catalytic component is selected from the group consisting of platinum, palladium, rhodium and mixtures thereof.
16. The catalyst of claim 15 wherein the platinum-group metal catalytic component comprises a mixture of platinum and rhodium.
17. The catalyst of claim 16 wherein the platinum and rhodium are present in the mixture in a molar ratio of about 0.2 to about 20 moles of platinum per mole of rhodium.
18. The catalyst of claim 17 wherein the platinum and rhodium are present in the mixture in a molar ratio of 1 to 5 moles of platinum per mole of rhodium.
19. The catalyst of claim 14 wherein the platinum-group metal catalytic component is present in a loading of about 10 to about 200 g/ft<sup>3</sup> of carrier

20. The catalyst of claim 19 wherein the platinum-group metal catalytic component is present in a loading of 20 to 100 g/ft<sup>3</sup> of carrier.

21. The catalyst of claim 1 wherein the three-way conversion catalyst material is dispersed on a refractory metal oxide support.

22. The catalyst of claim 21 wherein the support comprises finely divided particles having a particle size above 10 to 15 micrometers and is present in an amount of about 0.1 to about 4.0 g/in<sup>3</sup> of carrier.

23. The catalyst of claim 21 wherein the support is selected from the group consisting of alumina, silica, titania, silica-alumina, alumina-silicates, aluminum-zirconium oxide, alumina-chromia, alumina-cerium oxide and mixtures thereof.

24. The catalyst of claim 23 wherein the support comprises gamma alumina.

25. The catalyst of claim 24 wherein the gamma alumina is doped with a rare earth component.

26. The catalyst of claim 25 wherein the rare earth component is selected from the group consisting of lanthanum, neodymium and mixtures thereof.

27. The catalyst of claim 26 wherein the rare earth component is present in an amount of 0.02 to about 0.5 g/in<sup>3</sup> of carrier.

28. The catalyst of claim 1 wherein the topcoat further comprises a binder.

29. The catalyst of claim 28 wherein the binder comprises zirconia.

30. The catalyst of claim 28 wherein the binder is present in an amount of about 0.02 to about 1.5 g/in<sup>3</sup> of carrier.